W. F. O'NEAL.

NUT LOCK.

APPLICATION FILED JUNE 13, 1907.

900,196.

Patented Oct. 6, 1908.

Fig. 1.

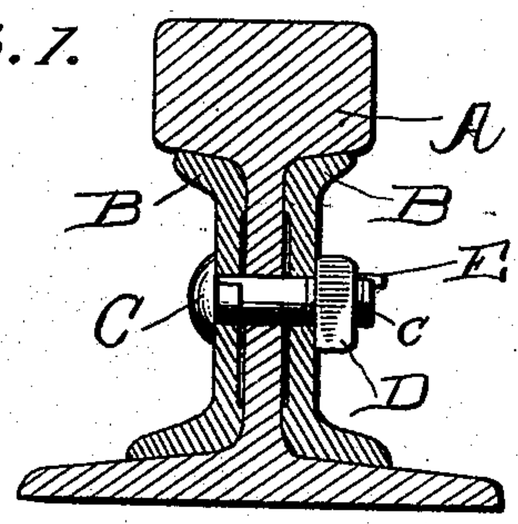


Fig. 2.

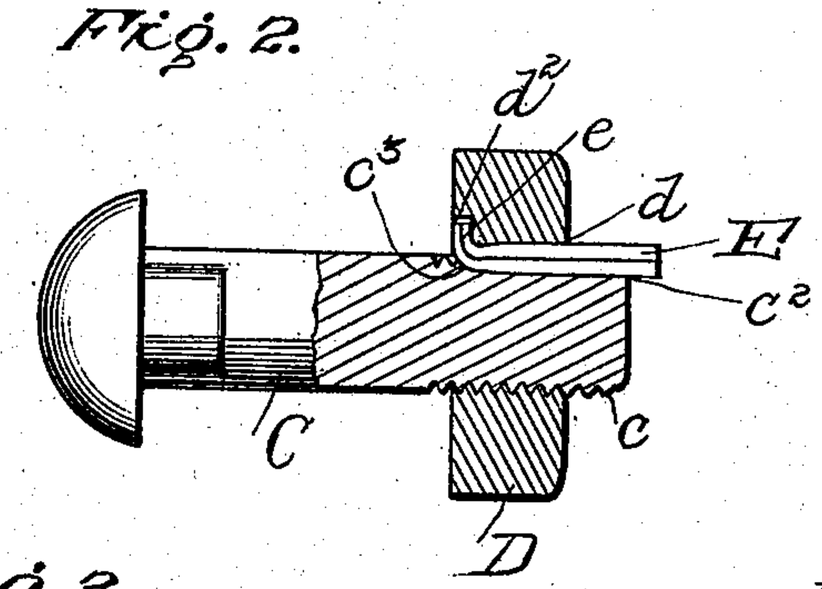


Fig. 3.

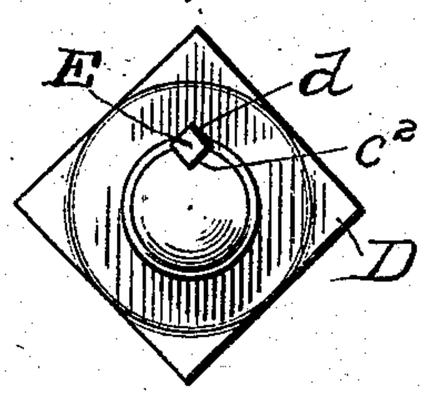


Fig. 4.

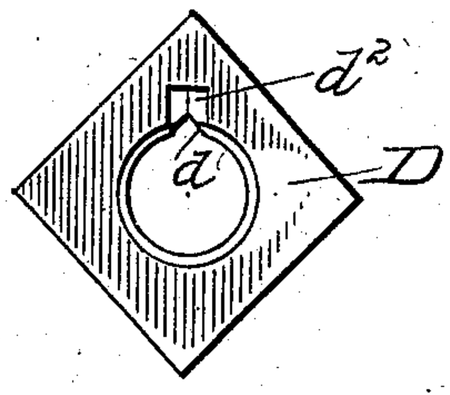


Fig. 5.

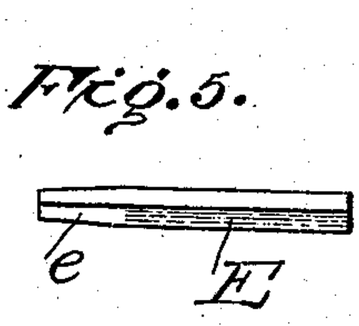
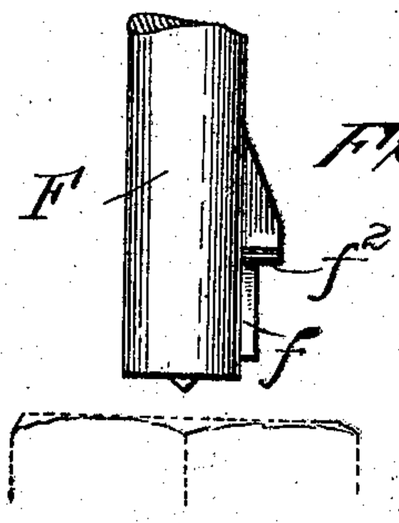


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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NUT-LOCK.

No. 900,196. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed June 13, 1907. Serial No. 378,765.

To all whom it may concern:

Be it known that I, WILLIAM F. O'NEAL, a citizen of the United States, residing at Wenatchee, in the county of Chelan and State of Washington, have invented certain new and useful Improvements in Nut-Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide a novel form of nut-lock adapted for use especially in railway construction, but which is applicable in any other situation, and which shall be extremely simple of construction, easy of application, and thoroughly efficient in use, positively to lock a bolt under any and all circumstances of jar, strain, and stress.

With this object in view, the invention resides in the novel construction, combination, and arrangement of parts of a nut-lock as hereinafter fully described in the specification, summed up in the claims, and illustrated in the drawing, in which latter:

Figure 1 is a vertical section of a railway-rail and fish-plates, showing the application of my improved nut-lock; Fig. 2 is a detail view, partly in section, of the bolt, nut, and locking-key or wedge of my invention; Fig. 3 is a bottom plan view of Fig. 2; Fig. 4 is a detail view, in the nature of a bottom plan, of the nut; Fig. 5 is a detail view of the locking-key; and Fig. 6 is a side elevation of a punch adapted, in one operation, to form the screw-hole and the grooves in the nut.

Referring to the drawings, A designates a railway rail, and B, B fish-plates, all of any ordinary or preferred construction, and forming no part of my invention.

Adapted to be passed through the bolt and fish-plates is my peculiar form of bolt C, provided with the usual threaded end portion *c*. Extending longitudinally of the bolt-shank from its lower end toward its head is a groove c^2, desirably right-angled in cross-section, and terminating at the upper end in an upward curve c^3.

Adapted to be threaded on the bolt is my peculiar form of nut D, provided interiorly with a corresponding groove *d*, desirably right-angled in cross section. At the inner or smaller end of the groove *d*, there is formed in the face of the nut another groove d^2 disposed at an angle to and communicating with said groove *d*.

The locking-key E is flat at both ends, and preferably formed square, or as a right-angled parallelogram in cross-section, and is also tapered toward one end as shown at *e*.

In the application of my nut-lock in use, the nut is screwed onto the bolt until it is tight, when the two grooves will register, as shown clearly in Fig. 2; then the locking-key is driven in, completely filling the two grooves, so that no amount of jar or strain can loosen it, or cause any movement of the key in the grooves. As the tapering end of the locking-key strikes the curved end c^3 of the groove c^2 in the bolt, the said end of the key is bent upward, and continued movement of the key drives the said end thereof into the groove d^2 in the face of the nut. The key is thus braced against the nut on one side and against the bolt on the other side, and the grooves being completely filled thereby, no space is left in which motion can originate. The end of the key, by entering the small groove d^2, insures keeping the key in place and prevents jar from loosening the same.

If desired, the upper portion of the key, extending beyond the end of the bolt, may be bent thereover.

Advantageously, the locking-key is made of soft metal, whereby it may be removed and reinserted, when desired.

From the above description, taken in connection with the drawing, it will be seen that I have devised a nut-lock which is peculiarly efficacious for use in railway construction, which presents the great merit of extreme simplicity of construction, which possesses the desideratum of ease of application (being capable of application by the most inexpert workman on a railway), and which positively locks the bolt and nut against working loose.

In Fig. 6, I have shown a desirable form of punch F adapted, in one operation, to form in the nut the screw-hole and the grooves. The punch is formed substantially cylindrical and is provided with two lips or teeth, one lip *f* forming the groove *d* in the nut, and the other lip f^2 forming the shallow groove d^2 in the face of the nut. The operation of the punch will be obvious.

Having thus fully described my invention,

what I claim as new and desire to secure by Letters-Patent is:

In a nut lock, the combination with a bolt, of a nut, a key, square shaped in cross section, provided with flattened ends and having its side walls parallel for the major portion of its length and tapered the remainder thereof, a right angled key receiving groove extending longitudinally of said bolt and tapered to receive said key, the tapered end of said groove being curved upwardly, a right-angled groove extending transversely of the interior of said nut, the walls of said groove being parallel with the sides of the nut for the greater portion of its length but tapered toward the inner face thereof to a degree corresponding with that of the groove in the bolt, a cut away portion on the inner face of the nut adjacent said tapered part of the groove, a V-shaped bottom-face in said cut away portion, said key being adapted to coöperate with the grooves in the bolt and nut, and the tapered end of the key being arranged to be deflected by the upwardly curved portion at the extremity of the reduced end of the bolt groove into the cut away portion in the inner face of the nut, the end of said key being positioned at right angles with the body thereof and two sides of the end portion arranged to lie in the aforementioned V-shaped bottom face of said cut away portion substantially as described.

In testimony whereof, I affix my signature, in the presence of two subscribing witnesses.

WILLIAM F. O'NEAL.

Witnesses:

HENRY CRASS,

DANIEL GEURINGER.